

1. First Embodiment

[0063] [1-1. Principle for Extracting Specified Region and Central Coordinate of Specified Region]

[0064] FIG. 1 is a view illustrating a principle based on which an information processing apparatus according to a first embodiment of the present disclosure extracts focused targets and a selection candidate from a plurality of options. As shown in FIG. 1, an information processing apparatus 100A according to the first embodiment of the present disclosure has a position detection surface 211A for detecting a position of a manipulation object OP. For example, when the position detection surface 211A is made of an electrostatic touch panel, the degree of proximity of the manipulation object OP with respect to the position detection surface 211A is measured as a change of capacitance on the surface of the position detection surface 211A. A position detection surface 211B shows that the capacitance of the position detection surface 211B is changed by the manipulation object OP that comes into contact with or in proximity to the position detection surface 211B. In the explanation below, the change of the capacitance means, for example, the change of a value with respect to a state where the manipulation object OP is not in proximity to the position detection surface 211.

[0065] In this case, the information processing apparatus 100A according to the first embodiment of the present disclosure extracts, as a contact region 214, a region in which a change of capacitance at each measurement point is more than a threshold value (for example, contact threshold value) from the position detection surface 211D. The contact region 214 is an example of a specified region explained later. Therefore, in the explanation below, the specified region may be substituted for the contact region 214. In this case, the threshold value is defined as the change of the capacitance when the manipulation object OP is in contact with the position detection surface 211, and a region in which the manipulation object OP is in contact with the position detection surface 211 is extracted as the contact region 214. Alternatively, the threshold value may be defined as the change of the capacitance when the manipulation object OP is in proximity to the position detection surface 211. In this case, the information processing apparatus 100A can extract, as the specified region, a region in which the manipulation object OP is in proximity to the position detection surface 211. For example, the contact region 214 is used to extract focused targets explained later.

[0066] In this case, the information processing apparatus 100A uses the electrostatic touch panel to measure the degree of proximity of the manipulation object OP with respect to the position detection surface 211. However, the used touch panel is not limited to the electrostatic touch panel. For example, an optical touch panel and the like may be used to measure the degree of proximity. In this case, the information processing apparatus 100A extracts a region in which the degree of proximity is more than the threshold value as the specified region. However, the degree of proximity to the position detection surface 211 does not have to be measured. For example, when the information processing apparatus 100A can detect the manipulation object OP being in contact with the position detection surface 211, the information processing apparatus 100A can extract the specified region detected as being in contact with the manipulation object OP.

[0067] The information processing apparatus 100A can calculate a central coordinate 212 from, for example, the contact region 214. For example, the information processing apparatus 100A can calculate, as the central coordinate 212, a barycentric point of a capacitance 213 from among the measurement points on the position detection surface 211C. However, the information processing apparatus 100A can also calculate the central coordinate 212 using other methods. For example, a coordinate where the capacitance 213 changes the greatest may be calculated as the central coordinate 212. Alternatively, the coordinate of the barycentric point of the contact region 214 may be calculated as the central coordinate 212 without considering the degree of proximity such as of the capacitance 213. The central coordinate 212 is used to extract, for example, a selection candidate explained later.

[0068] According to the above control, the information processing apparatus 100A can extract the contact region 214 and the central coordinate 212.

[0069] [1-2. Key Input Operation with Software Keyboard]

[0070] FIG. 2 is a view illustrating an example where the information processing apparatus 100A according to the first embodiment of the present disclosure is applied to key input operation with a software keyboard, on a mobile electronic device, such as a wireless mobile terminal. As shown in FIG. 2, a user is trying to perform key input operation with a manipulation object OP using a software keyboard displayed in a display region 241A of the information processing apparatus 100A. When the user brings the manipulation object OP into contact with or in proximity to a position detection surface 211E, the information processing apparatus 100A extracts the contact region 214 and the central coordinate 212. The position detection surface 211 and the display region 241 are provided on the information processing apparatus 100A in an overlapping manner. Correspondence between overlapping positions of the position detection surface 211 and the display region 241 is managed in the information processing apparatus 100A. Therefore, each position that overlaps in the position detection surface 211 and the display region 241 is recognized as a corresponding position by the information processing apparatus 100A.

[0071] The information processing apparatus 100A can extract keys, e.g., “Q”, “W”, “E”, “R”, “A”, “S”, “D”, “F”, “Z”, “X”, “C” (examples of alphanumeric characters) included in the contact region 214 as focused targets. The contact region may also be construed as a covered region that covers the keys within the footprint of the portion of the user’s finger, or other manipulation object, that interacts with the display. Further, the information processing apparatus 100A can extract a key, e.g., “S” at a position of the central coordinate 212 as a selection candidate. The information processing apparatus 100A can display, for example, the keys extracted as the focused targets in such a manner that they are displayed separately from the keys to be pressed by a user. In a display region 241B, the keys “Q”, “W”, “E”, “R”, “A”, “S”, “D”, “F”, “Z”, “X”, “C” extracted as the focused targets are displayed in a window WI by the information processing apparatus 100A.

[0072] As shown in the display region 241B, the information processing apparatus 100A can display a key, e.g., “S”, extracted as a selection candidate in such a manner that the key “S” is more conspicuous (or emphasized with, e.g., color, scale, cursor, or geometric marker) than the other keys